

Section II (Remarks)

Claim Rejections

In the October 3, 2005 Office Action, claims 1-11 and 23-24 were rejected on various grounds over various references and/or combinations thereof, including:

- a new rejection of claims 1-11 and 23-24 under 35 USC 112, first paragraph, as failing to comply with the written description requirement;
- a sustained rejection of claims 1-8, 11, and 23-24 under 35 USC 103(a) as obvious over Bergkvist in view of Achikita et al.;
- a sustained rejection of claims 1-8, 11, and 23-24 under 35 USC 103(a) as obvious over DE 19815087 in view of Tanaka et al.;
- a sustained rejection of claims 1-11 and 23-24 under 35 USC 103(a) as obvious over JP 2002-256255 in view of Bergkvist;
- a sustained rejection of claims 1-11 and 23-24 under 35 USC 103(a) as obvious over JP 2001-009727 in view of Magnusson et al. and Bergkvist;
- a sustained rejection of claims 1-11 and 23-24 under 35 USC 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist;
- a sustained rejection of claims 9-10 under 35 USC 103(a) as obvious over DE 19815087 in view of Tanaka et al. as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd;
- a sustained rejection of claims 1-11 and 23-24 under 35 USC 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist, as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd.
- a new rejection of claims 1-8, 11 and 23-24 under 35 USC 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al.
- a new rejection of claims 9-10 under 35 USC 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al. as applied to claim 1 and further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd.

Law relating to the rejections under 35 U.S.C. § 112, first paragraph, and the traversal of such rejections is provided below. Thereafter, law relating to the rejections under 35 U.S.C. § 103 is provided, followed by discussion of the disclosures of the various cited art, and then by the

traversal of the § 103 rejections. Reconsideration of the patentability of claims 1-11 and 23-24 is requested, in light of the ensuing remarks.

A. Rejections Under 35 USC § 112, First Paragraph

1. Law Regarding Rejections Under 35 USC § 112, First Paragraph

The enablement requirement ensures that the specification and a patent teach those skilled in the art how to make any use the full scope of the claimed invention without undue experimentation. *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997). The first paragraph of Section 112 requires nothing more than **objective enablement**. *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993) (emphasis added). The scope of enablement must only bear a "reasonable correlation" to the scope of the claims. *In re Fisher*, 427 F.2d 833, 839, 16 USPQ 18, 24 (CCPA 1970). The fact that some experimentation is necessary does not preclude enablement; what is required is that the amount of experimentation "must not be unduly extensive." *Atlas Powder Co., v. E.I. DuPont de Nemours & Co.*, 224 USPQ 409, 413 (Fed. Cir. 1984). The Patent and Trademark Office Board of Appeal cogently summarized the point when it stated:

"The test is not merely quantitative, since a **considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed** to enable the determination of how to practice a desired embodiment of the invention claimed." *Ex parte Jackson*, 217 USPQ 804, 807 (1982) (emphasis added).

Whenever the Patent Office asserts that the enabling disclosure is not commensurate in scope with the scope of protection sought by the claims, **it is incumbent on the Office to establish a prima facie case of lack of enablement**. *In re Armbruster*, 512 F.2d 676, 185 USPQ 152 (CCPA 1975); *In re Marzocchi*, 439 F.2d 220, 169 USPQ 367 (CCPA 1971). To meet the burden of proof, the Examiner must advance acceptable reasoning inconsistent with enablement. *In re Straheilevitz*, 668 F.2d 1229, 1232, 212 USPQ 561, 563 (CCPA 1982); *In re Wright*, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

Claims are to be given their broadest reasonable interpretation that is consistent with the specification. MPEP 2164.08. "That claims are interpreted in light of the specification does not mean that everything in the specification must be read into the claims." *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957, 220 USPQ 592, 597 (Fed. Cir. 1983), cert. denied, 469 U.S. 835 (1984) (emphasis added). **Limitations and examples in the specification do not generally limit what is covered by the claims.** MPEP 2164.08. Section 112, first paragraph, does not require a specific example of everything within the scope of a broad claim. *In re Gay*, 50 CCPA 725, 309 F.2d 769, 135 USPQ 311 (1962). Indeed, it is impermissible for the Patent Office to limit all claims to specific examples provided in a specification. *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973)(citing *American Anode, Inc. v. Lee-Tex Rubber Products Corp.*, 136 F.2d 581, 585, 58 USPQ 7, 11 (7th Cir. 1943) and *Smith v. Snow*, 294 U.S. 1 [at pages 11 et seq.], 24 USPQ 26, 30).

The technical field and the completeness of understanding of that field dictate the scope of enablement required to enable broad patent claims under 35 USC § 112. As noted by the predecessor court to the Federal Circuit:

[T]he first paragraph of 35 U.S.C. 112 ... requires that the scope of the claims must bear a **reasonable correlation** to the scope of enablement provided by the specification to persons of ordinary skill in the art. **In cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws. In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved.**

In re Fisher, 427 F.2d 833, 166 USPQ 18, 24 (CCPA 1970). This is consistent with multiple cases discussed in MPEP section 2164.08 (8th Ed., Rev. Oct. 2005) – the majority of cases in which the disclosure was held to be insufficient to enable the scope of the claims involved biotechnologies and complex chemical reactions. See, e.g., *In re Vaeck*, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991)¹; *Amgen v. Chugai Pharm. Co.*, 927 F.3d 1200, 18 USPQ2d 1016 (Fed. Cir.), cert. denied, 502 U.S. 856 (1991)²; *In re Wright*, 999 F.3d 1557, 1562, 27

¹ (section 112, first paragraph rejection sustained as to claims for genetic engineering techniques for producing proteins toxic to mosquito and black fly larvae, in view of relatively incomplete understanding of biology of cyanobacteria as of applicants' filing date and limited disclosure by applicants of particular cyanobacterial genera operative in claimed invention)

² (section 112, first paragraph rejection sustained as to claims directed to a purified DNA sequence encoding polypeptides that are analogs of erythropoietin (EPO) where only a few EPO analog genes were disclosed but claims encompassed all analogs of EPO without disclose of other genetic sequences and how to make them)

USPQ2d 1510, 1513 (Fed. Cir. 1993)³; *In re Goodman*, 11 F.3d 1046, 1052, 29 USPQ2d 2010, 2015 (Fed. Cir. 1993)⁴; *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 23-24 (CCPA 1970)⁵.

Restating a pertinent portion of the excerpt provided above, a **two-part test** for determining if an embodiment provides sufficient support for broad claims directed to mechanical elements is whether:

- (1) other embodiments may be made without difficulty; and
- (2) the performance of such other embodiments may be predicted by applying known scientific laws.

In re Fisher, 166 USPQ at 23-24 (CCPA 1970).

2. Traversal of Rejections Under 35 USC § 112, First Paragraph

a) *Purported "new matter"*

In making the rejections under 35 USC § 112, first paragraph, the Examiner repeatedly referred to "new matter added to [the] claims." October 3, 2005 Office Action, pp. 2-3. Applicants wish to clarify that while *new limitations* have been added to the claims, no *new matter* within the meaning of 35 U.S.C. § 132 has been added to any of the pending claims.

b) *"Containing at least one of boron, aluminum, and titanium"*

³ (section 112, first paragraph rejection sustained as to claims for live non-pathogenic vaccines and processes for making same to elicit immunoprotective activity in any animal toward any RNA virus in view of disclosure of only a single working example directed to a uniquely tailored *in vitro* method of producing a particular recombinant virus vaccine)

⁴ (section 112, first paragraph rejection sustained as to claims for producing mammalian peptides in plant cells where specification contained was limited to producing gamma-interferon in a dicot species, and the evidence supported a need for extensive experimentation to encode mammalian peptide into a monocot plant at the time of filing)

⁵ (section 112, first paragraph rejections sustained for (1) claims covering substantially all adrenocorticotrophic hormones (ACTH) preparations, whether produced synthetically or by breakdown of 39 amino acid peptides, to form a polypeptide containing any number of the amino acids for therapeutic use so long as the product exhibits the threshold activity without side effects where the application taught only the production of 39 amino acid ACTH; and (2) claims covering products having potency (therapeutic activity) greater than 230% of the 1 International Unit standard where such potencies were not obtainable from the disclosure's teachings plus ordinary skill (with the Court specifically noting that the problem was not analogous to the context of *substantially pure* compositions due to the small or nonexistent range of possible further purification))

In the October 2, 2005 Office Action, the examiner opined that the limitation “containing at least one of boron, aluminum and titanium” added to claims 1, 23, and 24 was much broader than what was disclosed in the specification, and rejected the claims under 35 USC § 112, first paragraph. In support of this rejection, the examiner reasoned that:

Although the specification states that these components can be present, these components are present in specific amounts. Since the claims do not define the amount of these components it is broader in scope than the disclosure.

October 3, 2005 Office Action, page 2. This reasoning is insufficient to support a *prima facie* case of enablement.

MPEP 2164.08, entitled “Enablement Commensurate in Scope With the Claims,” provides both that “[c]laims are to be given their broadest reasonable interpretation that is consistent with the specification,” and that “[l]imitations and examples in the specification do not generally limit what is covered by the claims.” See also *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973).

Claims 1, 23, and 24 require the presence of any of boron, aluminum and titanium. The examiner concedes that “**this specification states that these components [i.e., boron, aluminum and titanium] can be present.**” October 3, 2005 Office Action, page 2. The examiner’s further suggestion that the presence of boron, aluminum and titanium in the claims **must be limited** to the amounts provided in the specification clearly runs afoul of the prohibition against such limitation stated in *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973) – that the Patent Office cannot limit all claims to specific examples provided in a specification. **The examiner points to no teaching or suggestion in the disclosure – and to no legal authority – that the presence of boron, aluminum and titanium should be limited to any upper value.** Instead, the examiner has conjured this limitation out of thin air. Such conjuring is impermissible.

There is no question raised as to the fact that there are specific examples of what appears to be the preferred embodiment and best mode contemplated by the applicant of carrying out his claimed invention; we are here dealing only with a possible alternative embodiment within the scope of the claims. What the Patent Office is here apparently attempting is to limit all claims to the specific examples, notwithstanding the clear disclosure of a broader invention.

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The mechanical nature of the technology embodied in claims 1, 24, and 25 calls for application of the two-part test of *In re Fisher* (166 USPQ at 23-24) to determine the suitability of the enablement for the claims according to Section 112, first paragraph. The first prong, whether “other embodiments may be made without difficulty” is clearly satisfied here to increase the amounts of boron, aluminum, or titanium into the ranges deemed objectionable by the examiner. With the benefit of the present patent disclosure, it would be a trivial exercise for any skilled artisan to modify the amounts of any of boron, aluminum, and titanium in the feedstock to manufacture the abrasives as claimed. Likewise, second prong of the *In re Fisher* test, “whether the performance of such other embodiments may be predicted by applying known scientific laws,” is also satisfied here. With the benefit of the present patent disclosure, any skilled artisan could easily modify the amounts of any of boron, aluminum, and titanium as desirable to produce abrasive powders as claimed. Regarding the specific gravity and hardness ranges specified in claims 1, 23, and 24, for example, such parameters are quantified for all stable elements of the periodic table in various scientific and engineering textbooks. By applying this widely available information and known scientific laws, one skilled in the art could easily predict the properties and performance of abrasives according to other embodiments within the scope of claims 1, 24, and 25.

Based on the foregoing, the examiner has not advanced acceptable reasoning inconsistent with enablement sufficient to establish a *prima facie* case of a lack of enablement required to support the rejection under 35 USC § 112. Therefore, withdrawal of the rejection under 35 USC § 112 is respectfully requested.

c) “*Proviso limitation never defined in a single passage or example*”

In the October 2, 2005 Office Action, the examiner opined that the proviso limitation of claims 1, 23 and 24 was improper “because the specification never defines this proviso in a single passage or example.” Without any legal citation, the examiner further stated: “[i]t is improper to combine examples to make up a claim limitation.” October 3, 2005 Office Action, page 2. This rejection, while creative, is without merit.

Applicants respectfully request citation of legal support for the bare proposition that claims cannot be narrowed consistent with the disclosure. Absent such support, Applicants submit that the rejection should be withdrawn. The examiner concedes that the presence of silicon in a

range from 0.7 to 1.4 wt% is disclosed in the specification, yet objects to the limitation "contains silicon in the amount of at least 0.7 wt%. October 3, 2005 Office Action, page 2.

As noted previously, "[I]mitations and examples in the specification do not generally limit what is covered by the claims." MPEP 2164.08. **The Patent Office cannot limit all claims to specific examples provided in a specification.** *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973). Yet that is exactly what the examiner has attempted to do again here – to read a silicon range (0.7 to 1.4 wt%) *from one operative example* and draw an inference that silicon ranges greater than 1.4 wt% could not be employed. In the absence of a clear teaching or disclaimer that silicon in amounts greater than 1.4 wt % would not be operative, the mere inclusion of the 1.4 wt% in one example of the description is not a sufficient basis for limiting the claims.

Applicants hereby incorporate by reference the preceding discussion of the two-part test of *In re Fisher* (166 USPQ at 23-24) as applied to claims 1, 24, and 25. There is no doubt that, with the benefit of the present patent disclosure, one of ordinary skill in the art could: (1) make embodiments with silicon weight percentages above 1.4 wt% without difficulty; and (2) predict the performance of such other embodiments applying known scientific laws.

Based on the foregoing, the examiner has not advanced acceptable reasoning inconsistent with enablement sufficient to establish a *prima facie* case of a lack of enablement required to support the present rejection under 35 USC § 112. Therefore, withdrawal of the rejection under 35 USC § 112 is respectfully requested.

d) "Anhydrous silica"

In the October 2, 2005 Office Action, the examiner rejected claim 11 under 35 USC 112, first paragraph, for including the limitation "anhydrous silica" without further limiting such anhydrous silica to "particles." In particular, the examiner stated that:

Since the claim does not define that the anhydrous silica is a particles (sic), it is broader in scope than the disclosure. Anhydrous silica, as claimed, can be a film or any other form other than a particle which is not the case according to the specification.

October 3, 2005 Office Action, page 3.

This rejection is meritless for multiple reasons. First, it is improper for the Patent Office to limit all claims to specific examples provided in a specification. *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973). Second, and more importantly, this reading of claim 11 ignores a commonsense reading of claim 10, on which claim 11 depends. Specifically, claim 11 states that “the substance comprises a material selected from the group consisting of stearic acid and anhydrous silica,” while claim 10 requires that the “substance ... is attached to a part or the entire surface of the inorganic metal powder.” In this respect, the claim only requires that the substance be in any form attachable to the powder. For example, the substance could be in the form of a film or a coating, or any other suitable form.

Since the examiner points to no limiting language in the specification indicating that “the substance” of claim 11 cannot be a non-powder, any illustrative examples should be treated as non-limiting of the physical form of the substance within the plain meaning of claim 11.

As before, Applicants hereby incorporate by reference the preceding discussions of the two-part test of *In re Fisher* (166 USPQ at 23-24) and apply them to claim 11.. There is no doubt that, with the benefit of the present patent disclosure, one of ordinary skill in the art could: (1) attach anhydrous silica to a part of or the entire surface of the inorganic metal powder in any form or using any method known in the art; and (2) predict the performance of such other embodiments applying known scientific laws.

Based on the foregoing, the examiner has not advanced acceptable reasoning inconsistent with enablement sufficient to establish a *prima facie* case of a lack of enablement required to support the present rejection under 35 USC § 112. Therefore, withdrawal of the rejection under 35 USC § 112 is respectfully requested.

e) “Pressurized” limitation

Claims 24 and 25 require ejection of a “pressurized fluid” onto molten metal that is ejected from a nozzle, with the fluid functioning to solidify the molten metal into the form of a powder. In the October 2, 2005 Office Action, the examiner rejected claims 23 and 24 under 35 USC 112, first paragraph, for utilizing the term “pressurized.” The examiner conceded that “the specification states that pressure can be used” but indicated that such disclosure “is limited to high pressure” and indicated that as now claimed the term “‘pressurized’ means the use of any pressure (i.e., low

or extremely small pressure applied), thus it is outside the scope of what is taught in the specification.”

Resort to the most basic principles of physics is warranted here. Fluids flow from regions of high pressure to low pressure. For a fluid to be ejected into a given environment, the fluid must inherently have an initial pressure higher than the ambient pressure of the environment.

A commonsense reading of the term “pressurized” would be consistent with the first definition provided in the Merriam-Webster Online Dictionary (www.m-w.com), as follows:

Main Entry: **pres-sur-ize**

Pronunciation: 'pre-sh&-"rIz

Function: *transitive verb*

Inflected Form(s): -ized; -iz-ing

1 : to confine the contents of under a pressure greater than that of the outside atmosphere; *especially* : to maintain near-normal atmospheric pressure in during high-altitude or spaceflight (as by means of a supercharger)

2 : to apply pressure to

3 : to design to withstand pressure

In other words, the term “pressurized” refers to the property of having a pressure greater than that of the outside (ambient) atmosphere. That is all that was intended with the use of the term “high pressure” in the disclosure and original claims 24 and 25, and such usage provides more than ample support for the term “pressurized” as presently used in the claims.

MPEP 2164.08 states that “[c]laims are to be given their **broadest reasonable interpretation** that is consistent with the specification.” Furthermore, the scope of enablement must only bear a “**reasonable correlation**” to the scope of the claims. *In re Fisher*, 427 F.2d 833, 839, 16 USPQ 18, 24 (CCPA 1970).

Here, the broadest reasonable interpretation of the term “pressurized” is “at a pressure greater than the ambient environment.” Such limitation is entirely consistent with the disclosure of “high pressure” – conceded to be indefinite by the examiner – as utilized in the specification. Amendment of the term “high pressure” to “pressurized” eliminates any ambiguity associated with the term “high.” The term “high pressure” as applied to “fluid” in the disclosure bears a very reasonable correlation to the term “pressurized” as used in claims 24 and 25 (MPEP 2164.08), and

"pressurized fluid" as used in the claims is entirely within with the broadest reasonable interpretation of "high pressure fluid" as used in the specification. *In re Fisher*, supra.

Based on the foregoing, the examiner has not advanced acceptable reasoning inconsistent with enablement sufficient to establish a *prima facie* case of a lack of enablement required to support the present rejection under 35 USC § 112. Therefore, withdrawal of the rejection under 35 USC § 112 is respectfully requested.

B. Rejections Under 35 USC § 103

1. Law Regarding Rejections Under 35 USC § 103

Concerning §103 obviousness rejections, three requirements must be met for a *prima facie* case of obviousness. First the prior art reference(s) must teach all of the limitations of the claims. M.P.E.P. § 2143.03. Second, there must be a motivation to modify the reference or combine the teachings to produce the claimed invention. M.P.E.P. § 2143.01. Third, a reasonable expectation of success is required. M.P.E.P. § 2143.02. In addition, the teaching or suggestion to combine and the expectation of success must both be found in the prior art and not based on applicant's disclosure. M.P.E.P. § 2143.

In addition, a basic consideration, which applies to all obviousness rejections, is that references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination. MPEP 2141.02.

A showing of the suggestion teaching or motivation to combine the prior art references is an essential component of an obviousness holding. *See, e.g., Brown & Williamson Tobacco Corp. v. Phillip Morris Inc.*, 229 F.3d 1120, 11424-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000). There must be some motivation and suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); MPEP 2141.02. *See also In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("teaching of references can be combined *only* if there is some suggestion or incentive to do so.") (emphasis in original). Specificity is required: "[p]articular findings must be made as to the reason the skilled artisan with no knowledge of the claimed invention would have selected these components for combination in the manner claimed." *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed Cir. 2000).

"A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)." (emphasis in original; MPEP 2141.02).

Non-analogous art may only be combined under specific circumstances to support an obviousness rejection. As stated by the court in *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992),

"[i]n order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either [1] be in the field of applicant's endeavor or, if not, then [2] be reasonably pertinent to the particular problem with which the inventor was concerned." (Numbers added for clarity.)

In determining whether prior art is "reasonably pertinent to the particular problem with which the inventor was concerned," the intended use is important and should under the circumstances be considered for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. See MPEP 2173.05(g).

2. Traversal of Rejections Under 35 USC § 103

a) Patentability of Claims 1-11, 23 and 24 over the Reference Combinations Applied in the § 103 Rejections of Such Claims

Applicant's claimed invention, as broadly recited in amended independent claim 1 requires an abrasive composition that includes "an inorganic metal powder that contains at least one of boron, aluminum and titanium, ... with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%."

Since claims 2-11 depend directly or indirectly from claim 1, such claims also require "an inorganic metal powder that contains at least one of boron, aluminum and titanium... with the proviso that when the inorganic metal powder contains titanium in the absence of boron and

aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%.”

The remaining independent claims 23 and 24 likewise recite compositions containing at least one of boron, aluminum and titanium, subject to the same proviso concerning titanium.

Furthermore, the claims specify that the abrasive meets all of the following conditions:

- (1) its true specific gravity is 4 g/cm³ or more;
- (2) its average particle diameter is from 5 µm to 50 µm inclusive;
- (3) its maximum particle size is 100 µm or less;
- (4) its hardness (HMV) is from 110 to 340 inclusive.

Each of these conditions confers an important benefit to the resulting abrasive composition. A high specific gravity and particle size between 5 and 50 µm confers excellent grinding power. Application, page 9, lines 10-14. Ensuring that the maximum particle size is 100 µm or less promotes suitable grinding power while avoiding potential clogging problems such as in nozzles or crevices. Application, page 10, lines 1-5. If the hardness of the abrasive is low (e.g., below 110 HMV), then good grinding power cannot be expected. Application, page 9, lines 19-20. However, if the hardness of the abrasive is too high (e.g., above 340 HMV), then the abrasive may damage parts or objects other than the target to be ground. Application, page 7, lines 11-12.

No such composition is taught or suggested by the combinations of references that have variously been asserted against applicant's claims.

The examiner's blanket sustenance of all of the various rejections of all claims 1-11, 23 and 24 without addressing the substance of Applicants' previously-submitted arguments is erroneous and unwarranted. Careful consideration of the arguments presented below is respectfully requested.

a) Rejection of claims 1-8, 11, and 23-24 under 35 USC § 103(a) as obvious over Bergkvist in view of Achikita et al.

The primary Bergkvist reference describes warm compacting of stainless steel powders having very low oxygen (<below 0.20 wt%), low silicon (< ~0.5 wt%) and carbon contents (<0.03 wt.%). Specifically disclosed compositions of Bergkvist include powder compositions containing, by weight %, 10-30% of chromium, 0-5% of molybdenum, 0-15% of nickel, 0-0.5% of silicon, 0-1.5% of manganese, 0-2% of niobium, 0-2% of titanium, 0-2% of vanadium, 0-5% of Fe₃P, 0-

0.4% graphite and at most 0.3% of inevitable impurities, and essentially no nickel or alternatively 7-10% of nickel. A lubricant, such as metal stearates, paraffins, waxes, natural and synthetic fat derivatives, and polyamides, may be added to the composition in amounts between 0.1 and 2.0% by weight of the total composition. Bergkvist has been cited for teaching stainless steel powder having a chromium content of 10-30%, in which titanium can be present in an amount of 0-2%.

Achikita et al. describes an injection molding composition composed of a sinterable powder comprising at least one metal or alloy and a binder containing from 10 to 80% by weight of a low-density polyethylene, from 10 to 80% by weight of a paraffin wax and from 5 to 35% by weight of a boric acid ester (e.g., triglycol diborates, trialkyl borates, glycerol borates and alkyl diborates), with the ratio of the sinterable powder to the binder in the composition being from 30 to 70% by volume of the former and from 70 to 30% by volume of the latter. The sinterable powder is a powder of at least one selected from pure iron, stainless steel, carbonyl iron and pure cobalt. Achikita et al. has been cited for teaching "that powders generally have the claimed size" (page 5, lines 5-6 of the June 23, 2005 Office Action).

Concerning this rejection, the examiner has acknowledged that Bergkvist "does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel," Bergkvist's compositions are expressly stated to be low silicon (less than about 0.5% Si) in character, and Achikita et al.'s boric acid ester is an organic boron compound (as compared to the inorganic metal required by claims 1-11, 23, and 24.

The most basic requirement of any obviousness rejection under 35 USC § 103 is that the prior art reference(s) must teach all of the limitations of the claims. M.P.E.P. § 2143.03. The combination of Bergkvist and Achikita et al. fails in this regard, as it contains no derivative basis for applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium, ...with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%," as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

Bergkvist discloses the presence of titanium with silicon in an amount less than about 0.5 % Si, with no disclosure of boron or aluminum. 0.5% Si is less than the 0.7% Si minimally required by

claims 1-11, 24 and 25 when titanium is present. Moreover, Achikita et al. is directed to organic boron. Organic boron is distinct from the inorganic metal required by claims 1-11, 24 and 25.

Since any combination of Bergkvist in view of Achikita et al fails to teach all of the limitations of claims 1-8, 11 and 23-24, the obviousness rejection under 103(a) cannot stand. Withdrawal of the rejection is respectfully requested.

b) Rejection of claims 1-8, 11, and 23-24 under 35 USC § 103(a) as obvious over DE 19815087 in view of Tanaka et al.

The primary reference DE19815087 describes a stainless steel blasting grit comprising angular fragments of a stainless steel-chromium-carbon alloy having a hardness of at least 60 HRC, and containing at least 2 % carbon and 22-32% chromium. This reference has been cited for teaching of a blasting grit containing stainless steel having a chromium content of 10-30%.

The secondary reference Tanaka et al. discloses a blasting medium which has an average grain size of at most 20 µm and contains at least 90 mass % of a water-soluble inorganic salt, wherein the content of grains having grain sizes of at least 50 µm is at most 5 mass %. The blasting medium contains at least 90% of a water-soluble inorganic salt, preferably sodium hydrogencarbonate and/or potassium hydrogencarbonate, and an anti-caking agent having an average particle size of at most 20 µm, e.g., fumed silica or white carbon. Tanaka et al. has been cited as teaching "that blasting medium generally have the claimed size" (page 6, lines 14-15 of the June 23, 2005 Office Action).

Concerning this rejection, the examiner has acknowledged that DE19815087 "does not make any mention of boron, aluminum or titanium in the stainless steel," and Tanaka et al. likewise contains no disclosure or suggestion of such components of boron, aluminum or titanium.

Again, to support a rejection under 35 USC § 103, the prior art reference(s) must teach all of the limitations of the claims. M.P.E.P. § 2143.03. The combination of DE19815087 and Tanaka et al. fails in this regard, as it contains no derivative basis for applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium, ...with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further

contains silicon in an amount of at least 0.7 wt%," as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

Since neither DE19815087 nor Tanaka et al. disclose the use of any of boron, aluminum, or titanium, any combination of these references **fails to teach all of the limitations** of claims 1-8, 11 and 23-24, and (pursuant to MPEP § 2143.03) the obviousness rejection under 103(a) cannot stand. Withdrawal of the rejection is respectfully requested.

c) Rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over JP 2002-256255 in view of Bergkvist

The primary reference JP2002-256255 describes a coagulation- and agglomeration-resistant polishing material that overcomes water-related problems, in which surfaces of spherical inorganic particles are treated with a water-repellency-imparting substance. JP2002-256255 has been cited as teaching an abrasive comprising stainless steel that can have the claimed size, in which the abrasive is surface treated with a material that provides water resistance (page 7, lines 16-20 of the June 23, 2005 Office Action).

Concerning this rejection, the examiner has acknowledged that JP2002-256255 **"does not make any mention of boron, aluminum or titanium in the stainless steel,"** and as previously noted the examiner has acknowledged that Bergkvist **"does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel,"** it being additionally noted that Bergkvist's compositions are expressly stated to be **low silicon, less than about 0.5% Si.**

Again, to support a rejection under 35 USC § 103, **the prior art reference(s) must teach all of the limitations of the claims.** M.P.E.P. § 2143.03. The combination of JP2002-256255 and Bergkvist fails in this regard, as it contains no derivative basis for applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium, ...with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%." as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

Since neither JP2002-256255 nor Bergkvist disclose the use of any of boron, aluminum, or titanium, any combination of these references **fails to teach all of the limitations** of claims 1-8,

11 and 23-24, and (pursuant to MPEP § 2143.03) the obviousness rejection under 103(a) cannot stand. Withdrawal of the rejection is respectfully requested.

d) Rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over JP 2001-009727 in view of Magnusson et al. and Bergkvist

The primary reference JP2001-0009727 describes an abrasive blasting composition composed of inorganic particle powder and meeting all the following conditions (1) to (5):

- (1) $10 \leq A \leq 0.8C$
- (2) $0.03C \leq B \leq 0.5 C$
- (3) $40 \leq C \leq 500$
- (4) $30 \leq D \leq 95$
- (5) $E_2 - 3.5 \leq E_1 \leq E_2 - 0.5$

wherein:

- A: maximum particle size (μm) of the abrasive
- B: average particle diameter (μm) of the abrasive
- C: partition with d_1 + ground groove width d_2 (μm) at processing pitch
- D: an index (%) representing indeterminate forms of particles and indicating an area ratio of a particle projected area to a circumcircle
- E_1 : Mohs hardness of the abrasive
- E_2 : lower Mohs hardness of either the substrate or an electrode

JP2001-0009727 discloses that the abrasive can be any inorganic particle powder, natural or synthetic, e.g., natural inorganic particle powders such as limestone, barite and gypsum, and synthetic inorganic particle powders such as calcium carbonate, barium sulfate and calcium sulfate.

JP2001-0009727 has been cited as teaching an abrasive that can have the claimed size and comprises a material having a Mohs hardness defined by sections [0026]-[0027] of the reference, in which the abrasive is surface treated with a material that provides water resistance in an amount of 0.01-5%.

The secondary reference Magnusson describes a connector structure for separably connecting optical fibers including a pair of precision sleeves, each of which is adapted to surround one of the

fibers such that the ends thereof are in axial alignment, and has been cited for disclosure at column 9, lines 53-54 of a Mohs hardness of 5.7 for stainless steel.

Bergkvist has previously been discussed.

Neither JP2001-0009727 nor Magnusson discloses or suggests boron, aluminum or titanium in an abrasive composition, and as previously noted the examiner has acknowledged that Bergkvist "does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel," it being additionally noted that Bergkvist's compositions are expressly stated to be low silicon, less than about 0.5% Si.

Since no combination of JP2001-0009727, Magnusson, or Bergkvist disclose the use of any of boron or aluminum, and none disclose the use of titanium in combination with silicon of at least 0.7 wt%, any combination of these references fails to teach all of the limitations of claims 1-8, 11 and 23-24, and (pursuant to MPEP § 2143.03) the obviousness rejection under 103(a) cannot stand.

Again, to support a rejection under 35 USC § 103, the prior art reference(s) must teach all of the limitations of the claims. M.P.E.P. § 2143.03. The combination of any of JP 2001-009727, Magnusson, and Bergkvist fails in this regard, as it contains no derivative basis for applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium, ...with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%," as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

Additionally, the reliance upon Magnusson to support the proposed combination of JP2001-0009727 and Magnusson, is improper, as Magnusson is non-analogous art. Magnusson is directed to a connector structure for optical fibers. According to the Federal Circuit, to serve as a proper reference to support a claim rejection, the reference must either [1] be in the field of applicant's endeavor or, if not, then [2] be reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992). Magnusson fails both prongs of this test. Connecting optical fibers has no relation to abrasives for industrial use. The particular problems contemplated by Magnusson (e.g., connecting fiber optic cables) are similarly

unrelated to the specific problems contemplated by Applicants (e.g., providing abrasive compositions suitable for grinding workpieces).

Based on the foregoing, withdrawal of the instant rejection is respectfully requested.

e) Rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist

The primary reference JP2002-114968 describes an abrasive having an average particle diameter in a range of $1 \leq d_{50} \leq 80$, a dispersion coefficient in a range of $1 \leq d_x \leq 80$, a particle diameter sharpness in a range of $1 \leq d_{50}/d_x \leq 5$, a Morse hardness 1-12 in a range of $0 \leq (d_{90}-d_{10})/d_{50} \leq 10$, and a magnetism in a range of $10 \leq d_{max} \leq 200$, wherein the abrasive comprises stainless steel. JP2002-114968 has been cited for teaching an abrasive that can have the claimed size and comprises stainless steel (page 10, penultimate paragraph in the June 23, 2005 Office Action as incorporated by reference into the October 3, 2005 Office Action).

The other primary reference JP2001-122644 describes an abrasive that contains not less than 90% metal powder, wherein the abrasive comprises stainless steel. JP2001-122644 has been cited for teaching an abrasive of the claimed size that comprises stainless steel (page 10, last paragraph in the June 23, 2005 Office Action).

Bergkvist has been considered hereinabove.

Concerning this rejection, the examiner has acknowledged that each of JP2002-114968 and JP2001-122644 "does not make any mention of boron, aluminum or titanium in the stainless steel," and as previously noted the examiner has acknowledged that Bergkvist "does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel," it being additionally noted that **Bergkvist's compositions are expressly stated to be low silicon, less than about 0.5% Si.**

Again, to support a rejection under 35 USC § 103, **the prior art reference(s) must teach all of the limitations of the claims.** M.P.E.P. § 2143.03. The combination of any of JP 2002-114968, JP 2001-122644, and Bergkvist fails in this regard, as it contains no derivative basis for applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium, ...with the proviso that when the inorganic metal powder

contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%." as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

Since no combination of JP2002-114968, JP2001-122644, or Bergkvist disclose **all of the limitations** of claims 1-8, 11 and 23-24, the obviousness rejection under 103(a) cannot stand pursuant to MPEP § 2143.03. Accordingly, withdrawal of the instant rejection is respectfully requested.

f) Rejection of claims 9-10 under 35 USC § 103(a) as obvious over DE 19815087 in view of Tanaka et al. as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd

Each of the rejected claims 9 and 10 is dependent from amended claim 1.

DE19815087 has been considered above, and the examiner has acknowledged that it "does not make any mention of boron, aluminum or titanium in the stainless steel."

Tanaka et al. likewise has been considered hereinabove and contains **no disclosure or suggestion of such components of boron, aluminum or titanium.**

The teachings of JP2002-256255 have been described above and the examiner has acknowledged that JP2002-256255 "does not make any mention of boron, aluminum or titanium in the stainless steel."

JP2001-009727 has also been discussed above, and likewise **does not disclose or suggest boron, aluminum or titanium** in an abrasive composition.

Kydd discloses a mixture of metal powders and metallo-organic decomposition (MOD) compounds in an organic liquid vehicle. The metal can be any of copper, silver, gold, zinc, cadmium, palladium, iridium, ruthenium, osmium, rhodium, platinum, iron, cobalt and nickel, (Groups Ib, IIb and VIII), and indium, tin, antimony, lead and bismuth. Kydd has been cited for teaching at column 8, line 66-column 9, line 6 of surface treating metal particles with stearic acid in order to prevent agglomeration (page 12, lines 8-11 of the June 23, 2005 Office Action).

Kydd's organic vehicle/organometal/metal compositions are not in any way disclosive or suggestive of applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium," as recited in claim 1, and therefore likewise required in claims 9 and 10, each of which depends from claim 1.

Again, to support a rejection under 35 USC § 103, **the prior art reference(s) must teach all of the limitations of the claims**. M.P.E.P. § 2143.03. The combination of any of DE 19815087, Tanaka et al., JP 2002-256255, JP 2001-009727, and Kydd fails in this regard, as it contains no derivative basis for applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium, ...with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt %," as recited in claim 1, from which claims 9-10 depend.

Since no combination of DE 19815087, Tanaka et al., JP 2002-256255, JP 2001-009727, and Kydd disclose **all of the limitations** of claims 9-10, the obviousness rejection under 103(a) cannot stand pursuant to MPEP § 2143.03. Accordingly, withdrawal of the instant rejection is respectfully requested.

g) Rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist, as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd

All of the variously cited references have been discussed hereinabove.

Concerning this rejection, the examiner has acknowledged that each of JP2002-114968 and JP2001-122644 "does not make any mention of boron, aluminum or titanium in the stainless steel," and as previously noted the examiner has acknowledged that Bergkvist "does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel," it being additionally noted that Bergkvist's compositions are expressly stated to be low silicon, **less than about 0.5% Si**.

The teachings of JP2002-256255 have been described above and the examiner has acknowledged that JP2002-256255 “does not make any mention of boron, aluminum or titanium in the stainless steel.”

JP2001-009727 has also been discussed above, and likewise **does not disclose or suggest boron, aluminum or titanium** in an abrasive composition.

As noted above, Kydd’s organic vehicle/organometal/metal compositions are **not in any way disclosive or suggestive of** applicant’s claimed invention of “[a]n abrasive composed of an inorganic metal powder that contains **at least one of boron, aluminum and titanium**,” as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

Again, to support a rejection under 35 USC § 103, **the prior art reference(s) must teach all of the limitations of the claims**. M.P.E.P. § 2143.03. Any combination of JP2002-114968 or JP2001-122644 both in view of Bergkvist as applied to claim 1, further in view of either JP2002-256255, JP2001-009727 or Kydd fails in this regard, as it contains no derivative basis for applicant’s claimed invention of “[a]n abrasive composed of an inorganic metal powder that contains **at least one of boron, aluminum and titanium**, ...with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains **silicon in an amount of at least 0.7 wt%**,” as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

Since no combination of JP2002-114968, JP2001-122644, Bergkvist, JP2002-256255, JP2001-009727 or Kydd disclose **all of the limitations** of claims 1-11 and 23-24, the obviousness rejection under 103(a) cannot stand pursuant to MPEP § 2143.03. Accordingly, withdrawal of the instant rejection is respectfully requested.

h) Rejection of claims 1-8, 11 and 23-24 under 35 USC § 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al.

Bergkvist has been discussed hereinabove. The examiner has acknowledged that Bergkvist “does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel,” it being additionally noted that Bergkvist’s compositions are expressly stated to be low silicon, less than about 0.5% Si.

Achikita has been discussed hereinabove. Achikita et al. describes an injection molding composition composed of a sinterable powder comprising a boric acid ester – in other words, an *organic* boron compound.

Sridhar is directed to **corrosion-resistant and wear-resistant duplex stainless steel** consisting of about 5 to 60% ferrite and the balance consisting essentially of austenite comprising, in weight percent, less than 0.1 carbon, 6 to 16 cobalt, 16 to 26 chromium, 7 to 20 nickel, 3 to 6 silicon, up to 4 molybdenum, up to 3 copper, less than 0.4 nitrogen, and balance iron plus impurities, wherein the ratio of cobalt to silicon is between 1 and 4.5 to provide a desirable combination of wear- and corrosion-resistance. Galling resistance was measured for various cobalt-containing alloys utilizing a cylindrical pin rotated under pressure against an alloy sample block ten times through an angle of 120 degrees and analyzing the surface with a profilometer to obtain a galling resistance by comparison against a threshold load at which maximum galling damage exceeds 10 microns, with higher galling resistance values indicative of greater wear resistance. Galling resistance values between 3000 and 9000 lbs were obtained for alloys according to the invention. Sridhar teaches using resulting alloys as hot and cold rolled thin sheet or tubing (col. 6, lines 3-12), castings, wrought products, welding material (e.g., wire), or sintered powder metallurgy products (claim 3), and/or structural fasteners such as nuts and bolts as used in chemical processing (Abstract). Impurities including titanium or aluminum may be present as residual elements. Sridhar, col. 2, lines 51-63. **Sridhar fails to teach or suggest any abrasive composition.**

The examiner's reliance upon Sridhar to support the rejection of claims 1-8, 11 and 23-24 is improper, since **Sridhar is not analogous to the present invention**. According to the Federal Circuit, to serve as a proper reference to support a claim rejection, the reference must either [1] be in the field of applicant's endeavor or, if not, then [2] be reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992). Sridhar is in the field of wear-resistant steel for finished articles, whereas the present invention is directed to abrasive metal powders – a different field of endeavor. Under the second prong of the *Oetiker* test, **intended use** is important in determining whether art is reasonably pertinent. MPEP 2173.05(g). **Sridhar fails both prongs of the *In re Oetiker* test**. A primary problem addressed by the present invention is providing abrasives adapted to grind a workpiece rapidly and in a manner that achieves high quality and high yields. Application, page 8, lines 10-12. The particular problem addressed by Sridhar is providing stainless steel having enhanced wear resistance, enhanced corrosion resistance, high ductility, and low cost. Sridhar, col. 1, lines 32-36; col. 1, line 64 – col. 2,

line 20. The **intended use** of the Sridhar steel is for **finished articles suitable for use in chemical processing service, to resist corrosion and wear**. (Sridhar, col. 1, lines 12-20 & Abstract).

Thus, in multiple respects, Sridhar is directed to the exact opposite of the present invention. Sridhar is directed to **finished articles**; the present invention is directed to **abrasive powders**. Sridhar's finished articles are specifically adapted to **resist surface wear**, whereas the present invention is directed to abrasives for **grinding away surface material**. Based on the non-analogous nature of the Sridhar reference and the teaching away from abrasive powders (*W.L. Gore & Associates, Inc. v. Garlock, Inc., supra*), it cannot support an obvious rejection pursuant to MPEP 2173.05(g) and *In re Oetiker, supra*.

Moreover, the lack of specificity of the rejection – namely, the lack of any “particular findings as to the reason the skilled artisan with no knowledge of the claimed invention would have selected [Sridhar] for combination in the manner claimed” (*In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)) – betrays yet another defect in the purported *prima facie* case of obviousness.

Sridhar further suggests high hardness values that would appear in excess of the intermediate 110-340 HMV hardness range specified in claims 1-8, 11 and 23-24. As noted in the present application, abrasives having hardness values either too low or too high provide poor results – either in the form of poor grinding power, or excessive grinding power that can lead to damage. Application, page 7, lines 11-12 and page 9, lines 19-20. Sridhar speaks to the desirability of tailoring cobalt and silicon contents to enhance galling wear resistance (Sridhar, col. 5, lines 1-10), presumably to very high values to attain “maximum galling resistance.” See, e.g., Sridhar, col. 5, lines 36-41 (further referring to “the presence of cobalt, about 12%, and silicon, about 4.5% [being] essential for the *highest degree of galling resistance*.”)

Even if it were proper to premise an obviousness rejection in part on Sridhar (which it is not for the reasons provided immediately above), a combination of Bergkvist, Achikita, and Sridhar would still fails to teach all of the limitations of claims 1-8, 11 and 23-24. These claims require, *inter alia*, not only the specified abrasive powder composition, but also that the abrasive meets all of the following conditions: (1) its **true specific gravity is 4 g/cm³ or more**; (2) its **average particle diameter is from 5 µm to 50 µm inclusive**; (3) its **maximum particle size is 100 µm or less**; and (4) its **hardness (HMV) is from 110 to 340 inclusive**. The Examiner points to no

specific teaching in any Bergkvist, Achikita, and Sridhar teaching all of the enumerated specific gravity range, the enumerated average particle diameter range, the enumerated maximum particle size threshold, and the enumerated hardness range.

To support a rejection under 35 USC § 103, **the prior art reference(s) must teach all of the limitations of the claims**. M.P.E.P. § 2143.03. Even if the improper combination of Bergkvist, Achikita, and Sridhar were proper (which it is not), the combination fails to teach all of the claimed limitations, as it contains no derivative basis for all of the limitations of applicants' claimed invention as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

- i) Rejection of claims 9-10 under 35 USC § 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al. as applied to claim 1 and further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd*

Bergkvist, Sridhar, and Achikita have been discussed hereinabove, both individually and in combination. The previous discussion of these references and the combination is incorporated by reference as to the present rejection of claims 9-10. Sridhar constitutes non-analogous art that is not properly cited against any of the pending patent claims, including claims 9-10. The examiner has acknowledged that Bergkvist "does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel," Bergkvist's compositions are expressly stated to be low silicon (less than about 0.5% Si) in character, and Achikita et al.'s boric acid ester is an organic boron compound (as compared to the inorganic metal required by claims 1-11, 23, and 24.

JP2002-256255 has also been discussed hereinabove. It has been cited as teaching an abrasive comprising stainless steel that can have the claimed size, in which the abrasive is surface treated with a material that provides water resistance (page 7, lines 16-20 of the June 23, 2005 Office Action). However, the examiner has acknowledged that JP2002-256255 "**does not make any mention of boron, aluminum or titanium in the stainless steel,**"

JP2001-0009727 has also been discussed hereinabove. It has been cited as teaching an abrasive that can have the claimed size and comprises a material having a Mohs hardness defined by sections [0026]-[0027] of the reference, in which the abrasive is surface treated with a material that provides

water resistance in an amount of 0.01-5%. However, JP2001-0009727 fails to disclose or suggest boron, aluminum, or titanium in an abrasive composition.

Kydd, which has also been discussed hereinabove, has been cited for teaching at column 8, line 66-column 9, line 6 of surface treating metal particles with stearic acid in order to prevent agglomeration (page 12, lines 8-11 of the June 23, 2005 Office Action). Kydd's **organic** vehicle/organometal/metal compositions are not in any way disclosive or suggestive of applicant's claimed invention, which specifically requires "[a]n abrasive composed of an **inorganic** metal powder that contains at least one of boron, aluminum and titanium," as recited in claim 1, and therefore likewise required in claims 9 and 10, since each of which depends from claim 1.

As noted previously, to support a rejection under 35 USC § 103, **the prior art reference(s) must teach all of the limitations of the claims**. M.P.E.P. § 2143.03. Even if the inclusion of Sridhar within the combination of were proper (which it is not), the combination of Bergkvist, Sridhar, and Achikita further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd, fails to teach all of the claimed limitations, as it contains no derivative basis for all of the limitations of applicants' claimed invention as recited in claim 1, from which claims 9-10 depend.

Since any combination of Bergkvist, Sridhar, and Achikita further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd fails to teach all of the limitations of claims 9 and 10, the obviousness rejection under 103(a) cannot stand. Withdrawal of the rejection is respectfully requested.

Based on the foregoing, claims 1-11, 23 and 24 are fully patentable over the references, and otherwise in form and condition for allowance.

Favorable action is respectfully requested.

If any issues remain outstanding, incident to the formal allowance of the application, the Examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss same, in order that this application may be allowed and passed to issue at an early date.

REQUEST FOR 1-MONTH EXTENSION OF TIME UNDER 37 C.F.R. 1.136(a)

Applicants hereby request a 1-month extension of time under 37 C.F.R. 1.136(a), thus extending the time for responding to the October 3, 2005 Office Action to February 3, 2006.

The enclosed payment of \$120.00 for request for time extension places the application in form for examination upon entry of the enclosed documents. Please charge any additional fee or amount properly payable in connection with this response to Deposit Account No. 08-3284 of Intellectual Property/Technology Law.

Respectfully Submitted,



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